

SYNCHRONIZATION TECHNIQUES FOR SPREAD  
SPECTRUM FREQUENCY HOPPED DATA LINKS AND  
RADIO'S USING THE SAME

ABSTRACT OF THE DISCLOSURE

A method of obtaining coarse synchronization in a frequency hopped/direct sequence spread spectrum (FH/DSS) time division multiple access (TDMA) data link network includes tuning the receiver to a first frequency used in the data link network. Then, signal strength of signals received on the first frequency during a sample time period is observed to obtain a sample energy pattern. An expected energy pattern during a time uncertainty window is determined based upon a known hopping pattern. Then, the sample energy pattern is compared to a first portion of the expected energy pattern, with the first portion of the expected energy pattern corresponding to a first time period within the time uncertainty window. A determination is then made as to whether the first time period is a coarse synchronization candidate based upon the comparison. If it is determined that the time period is a coarse synchronization candidate, one or more additional comparisons on different frequencies can be used to verify the hypothesis.